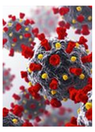
SARS CoV-2 Virus and COVID-19 Vaccine Information

Find the Information You Need to Make an Informed Vaccine Decision

SARS-Coronavirus-2 (SARS-CoV-2) and COVID-19



Most coronaviruses, including those causing the common cold, are not associated with significant mortality. The novel SARS-Coronavirus-2 (SARS-CoV-2) identified in 2019 causes a collection of symptoms that can cause severe illness, which has become known as COVID-19. The SARS-CoV-2 virus is contagious,[1] and infected persons can be asymptomatic[2] or exhibit symptoms ranging from mild to severe. Symptoms include fever; chills; cough; shortness of breath/difficulty breathing; fatigue; muscle, joint or body aches; rash; headache; new loss of taste or smell; sore throat; congestion or runny nose; nausea or vomiting and diarrhea.[3]

Complications of SARS-CoV-2 include pneumonia, acute respiratory failure, Acute, Respiratory Distress Syndrome (ARDS), acute kidney, liver, and heart injury, septic shock, disseminated intravascular coagulation (DIC), rhabdomyolysis (muscle breakdown), chronic fatigue syndrome, blood clots and death. Many complications may be caused by a condition known as a cytokine storm.[4]

Research on natural immunity from SARS-CoV-2 infection varies and suggests that durable immunity to the virus lasts for at least eight months[5] and may be life-long.[6] An August 2021 retrospective study of Israel's second largest HMO, yet to undergo peer review, found that natural immunity *"confers longer lasting and stronger protection against infection, symptomatic disease, and hospitalization caused by the Delta variant."*[7]

Click to learn more about SARS-CoV-2 virus…

COVID-19 Vaccine

New ways to make vaccines including new technologies and production platforms, such as mRNA vaccines, have become favored over the older traditional ways to make vaccines in the COVID-19 vaccine race.[8] [9] Currently, three experimental COVID-19 vaccines and one licensed COVID-19 vaccine[10] have been granted Emergency Use Authorization (EUA) by the U.S. Food and Drug Administration (FDA) for distribution and use in the U.S.[11] [12] Of the four vaccines in use, three are mRNA vaccines (Comirnaty, Pfizer-BioNTech and Moderna) and one utilizes a human adenovirus vector (Janssen). Nearly 300 different types of COVID-19 vaccines are being developed worldwide[13] and several experimental COVID-19 vaccines may be given EUA status in the near future.[14] [15]

U.S. Emergency Use Authorization does not mean that the FDA has evaluated all safety and efficacy data. Notably, in July 2021 the CDC reported that the fully vaccinated could still become infected and be capable of transmitting the virus to others[16] and data from Israel reported vaccine effectiveness for the experimental Pfizer-BioNTech vaccine may be as low as 39 percent.[17] While EUA status granted by the FDA to facilitates access to vaccines in a public health emergency, this status shields vaccine manufacturers and providers from liability under the Public Readiness and Emergency Preparedness Act (PREP Act).[18] Under federal law, EUA vaccine recipients must "have the option to accept or refuse the vaccine" and be informed of its risks.[19]

Click to learn more about COVID-19 vaccines…

Quick Facts

SARS-CoV-2 & COVID-19

- A few coronavirus strains can cause very severe respiratory disease with significant mortality, such as Severe Acute Respiratory Syndrome (SARS) that emerged in China in 2002-2003[20] and Middle Eastern Respiratory Syndrome (MERS) that was first reported in Saudi Arabia in 2012.[21] SARS-CoV-2, which was identified in China in late 2019[22] and declared a global pandemic by the World Health Organization (WHO) in March 2020,[23] [24] has a much lower mortality rate than SARS or MERS.[25]
- According to the U.S. Centers for Disease Control and Prevention (CDC), in 2020 about 94 percent of COVID-19 related-deaths occurred in persons over age 65 and individuals with underlying poor health conditions.[26] Among those the CDC consider to be at highest risk for severe COVID-19 disease are the immunocompromised; pregnant women; individuals with chronic heart, lung or kidney disease; the obese; type 2 diabetics; and individuals with cancer, Down's syndrome, sickle cell disease and thalassemia. There are other chronic health conditions that might increase risks for severe COVID-19 disease, including asthma, high blood pressure, dementia and neurologic conditions, liver disease, cystic fibrosis, and type 1 diabetes.[27]

Coronavirus Vaccine

- On August 23, 2021 the FDA licensed and granted EUA status to Comirnaty COVID-19 vaccine, an mRNA vaccine developed BioNTech, for use in persons 16 years of age and older.[28] The FDA also stated that use of Comirnaty and the experimental Pfizer-BioNTech mRNA COVID-19 vaccine are interchangeable due to having the same formulation. [29] Following FDA approval, the CDC's Advisory Committee on Immunization Practices (ACIP) recommended use of the 2-dose vaccine series in persons 16 years of age and older.[30]
- There are three experimental COVID-19 vaccines authorized for use in the U.S. The mRNA COVID-19 vaccines by Pfizer-BioNTech and Moderna were granted an Emergency Use Authorization (EUA) in December 2020 by the U.S. Food and Drug Administration (FDA) for use in persons 16 years of age and older and 18 years of age and older, respectively. [31] [32] In May of 2021 the experimental Pfizer-BioNTech vaccine was additionally authorized by the FDA for use in children and young as 12 years of age with a third dose authorized for the immunocompromised.[33] In February 2021, Janssen Biotech, Inc. of Johnson & Johnson, was granted an EUA by the FDA for an experimental COVID-19 vaccine, which uses a human adenovirus vector,[34] [35] for use in persons 18 years of age and older.[36]

Click to read more COVID-19 Quick Facts…

Learn More About SARS-CoV-2 Virus and COVID-19 Vaccine

NVIC encourages you to become fully informed about SARS-CoV-2 virus and the COVID-19 vaccine by reading all sections in the Table of Contents below, which contain many links and resources such as the manufacturer product information inserts, and to speak with one or more trusted health care professionals before making a vaccination decision for yourself or your child. This information is for educational purposes only and is not intended as medical advice.

» What is SARS-CoV-2 & COVID-19?
» Is COVID-19 contagious?
» History of COVID-19 in America
» Can COVID-19 cause injury and death?
» Who is at highest risk for getting COVID-19?
» Who is at highest risk for suffering complications of COVID-19?
» What are COVID-19 prevention and treatment options?
» What is COVID-19 vaccine?
» History of COVID-19 vaccine in America
» How effective is COVID-19 vaccine?
» Can COVID-19 vaccine cause injury & death?
» Who is at highest risk for complications from COVID-19 vaccine?
» Who should not get a COVID-19 vaccine?
» Questions to ask doctors about COVID-19 vaccine
» NVIC statements and commentaries related to COVID-19
» NVIC Coronavirus (COVID-19) Special Report
» SARS-CoV-2 & COVID-19 Quick Facts

IMPORTANT NOTE: *NVIC encourages you to become fully informed about covid-19 and the covid-19 vaccine by reading all sections in the Table of Contents, which contain many links and resources such as the manufacturer product information inserts, and to speak with one or more trusted health care professionals before making a vaccination decision for yourself or your child. This information is for educational purposes only and is not intended as medical advice.*

« Return to Vaccines & Diseases Table of Contents

Updated July 22, 2021

References

[1] U.S. Centers for Disease Control and Prevention. How COVID-19 Spreads. In: COVID-19. July 14, 2021.

[2] Rivett L, Sridhar S, Sparkes D, et al. Screening of healthcare workers for SARS-CoV-2 highlights the role of asymptomatic carriage in COVID-19 transmission. *ELife* 2020; 9:e58728.

[3] U.S. Centers for Disease Control and Prevention. Symptoms of COVID-19. In: COVID-19. Feb. 22, 2021.

[4] WebMD. Complications Coronavirus Can Cause Aug. 9, 2021.

[5] National Institutes of Health (NIH) Lasting immunity found after recovery from COVID-19 *NIH Research Matters* Jan. 26, 2021.

[6] Washington University School of Medicine in St. Louis. Good news: Mild COVID-19 induces lasting antibody protection. May 24, 2021.

[7] Gazit S, Shlezinger R, Perez G, et al. Comparing SARS-CoV-2 natural immunity to vaccine-induced immunity: reinfections versus breakthrough infections. *medRxiv* Aug. 25, 2021.

[8] Tregoning JS, Brown ES, et al. Vaccines for COVID-19. *Clin Exp Immunol.* 2020 Nov;202(2):162-192.

[9] Cohen J. Vaccine designers take first shots at COVID-19. *Science Magazine* Apr. 3, 2020.

[10] Malarkey MA, Gruber MF. BLA Approval – BioNTech Manufacturing GmbH. *FDA* Aug. 23, 2021.

[11] U.S. Food and Drug Administration. Moderna COVID-19 Vaccine. Aug. 18, 2021.

[12] U.S. Food and Drug Administration. FDA Issues Emergency Use Authorization for Third COVID-19 Vaccine. Feb. 27, 2021.

[13] World Health Organization. COVID-19 vaccine tracker and landscape. Aug. 27, 2021.

[14] Knapp A, Rosenbaum L. Here's What You Need to Know About Astra Zeneca's COVID-19 Vaccine. *Forbes* Nov. 23 2020.

[15] Robert-Guroff M. Replicating and non-replicating viral vectors for vaccine development. *Curr Opin Biotechnol.* December 2007;18(6):546-556.

[16] U.S. Centers for Disease Control and Prevention. Vaccination to Prevent COVID-19 Outbreaks with Current and Emergent Variants — United States, 2021. In: Emergency Preparedness and Response. July 27, 2021.

[17] Anderson M. Pfizer shot 39% effective against infection in Israel; 91% effective against severe disease. *Becker's Hospital Review* July. 23, 2021.

[18] The PREP Act and COVID-19: Limiting Liability for Medical Countermeasures. Congressional Research Service. Mar. 19, 2021.

[19]21 U.S. Code § 360bbb–3(a)(2)(B) – Authorization for medical products for use in emergencies – Approval Status of Product, *Cornell Law School.*

[20] U.S. Centers for Disease Control and Prevention. Frequently Asked Questions about SARS. In: Severe Acute Respiratory Syndrome (SARS). May 3, 2005.

[21] U.S. Centers for Disease Control and Prevention. About MERS. In: Middle East Respiratory Syndrome (MERS). Aug. 2, 2019.

[22] Wu YC, Chen CS, Chan YS. The outbreak of COVID-19: An overview. *J Chin Med Assoc* March 2020; 83(3): 217-220.

[23] Cucinotta D, Vanelli M. WHO Declares COVID-19 a Pandemic. *Acta Biomed* March 2020; 91(1): 157-160.

[24] Fisher BL. Coronavirus (COVID-19) Pandemic: NVIC Special Report. *National Vaccine Information Center (NVIC)* February-June 2020.

[25] Hewings-Maven Y. How do SARS and MERS compare with COVID-19? *Medical News Today* Apr. 10, 2020.

[26] Garg S, Kim L, Whitaker M, et al. Hospitalization Rates and Characteristics of Patients Hospitalized with Laboratory-Confirmed Coronavirus Disease 2019 — COVID-NET, 14 States, March 1–30, 2020. *MMWR* 2020; 69(15): 458-464.

[27] U.S. Centers for Disease Control and Prevention. People with Certain Medical Conditions. In: COVID-19. Aug. 20, 2021.

[28] Malarkey MA, Gruber MF. BLA Approval – BioNTech Manufacturing GmbH. *FDA* Aug. 23, 2021.

[29] Hinton DM. Letter of Authorization (reissued), In: Comirnaty and Pfizer-BioNTech COVID-19 Vaccine – Regulatory Information. *FDA* Aug. 23, 2021.

[30] Jenco M. CDC panel OKs COVID-19 vaccines; discusses myocarditis, boosters. *AAP News* Aug. 30, 2021.

[31] U.S. Food and Drug Administration (FDA). Pfizer-BioNTech COVID-19 Vaccine. Aug. 18June 25, 2021.

[32] U.S. Food and Drug Administration. Moderna COVID-19 Vaccine. Aug. 12, 2021.

[33] Hinton DM. Letter of Authorization (reissued), In: Comirnaty and Pfizer-BioNTech COVID-19 Vaccine – Regulatory Information. *FDA* Aug. 23, 2021.

[34] Levine H. The 5 Stages of COVID-19 Vaccine Development: What You Need to Know About How a Clinical Trial Works. *Johnson & Johnson* Sept. 23, 2020.

[35] Weintraub A. J&J COVID-19 vaccine candidate protects monkeys after single dose. *Fierce Biotech* July 30, 2020.

[36] U.S. Food and Drug Administration. FDA Issues Emergency Use Authorization for Third COVID-19 Vaccine. Feb. 27, 2021.

back | top

Make a Difference Support NVIC

NVIC is 100% funded by donations. Please give. Help educate families about preventing vaccine injury and death by donating to NVIC today.

Make a Donation!

Discover How You Can Take Action to Support Our Efforts

Click to Get Involved

Connect with us!

Ask 8 Kiosk & Educational Marketplace

Visit our Ask 8 Kiosk to explore a variety of FREE educational materials, from posters and brochures to embeddable web graphics and other resources.

View FREE Downloads

Copyright 1982-2021 **National Vaccine Information Center**. All Rights Reserved.
21525 Ridgetop Circle, Suite 100 Sterling, VA 20166